# Boston's LED Street Lighting Initiative



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## **Project Overview**



- Boston's Street Lights
  - 64,000 electric street lights
    - Mercury Vapor (42,000 as of 2010)
    - High Pressure Sodium (22,000 as of 2010)
- Mercury Vapor lights phased out NEPAct of 1992
- Streetlights account for 18% of the GHG emissions from Boston municipal operations
- Spend \$8 million annually on electricity and \$1.3 million on gas street lights

## The Opportunity



 Replacement of High Pressure Sodium, Mercury Vapor, and Incandescent Light with LED lighting technology



## First Steps



#### **2009**

- Pilot LED program in 2009 in section of the Boston Common and Jamaica Plain
- Feasibility analysis of LED technology and life cycle costs from the Public Works Department Street Lighting Division, Environment & Energy Services Cabinet and the Clinton Climate Initiative

#### **LED Benefits**



## L.E.D

- One of the most efficient light to date
- Negligible lamp lumen depreciation over same period of Mercury Vapor lights
- Lamp Life 60,000 hours
- Minimal loss due to design of LED chips

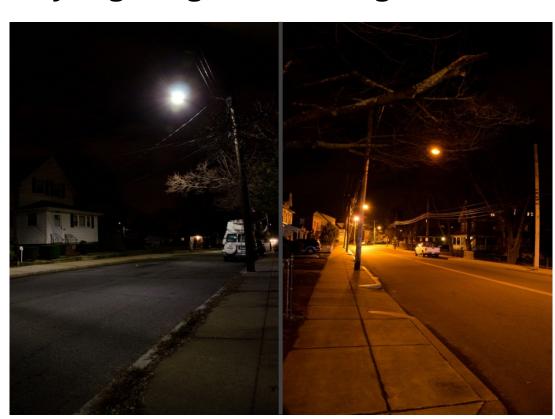
## Mercury Vapor

- Least energy efficient of the HID lamp family
- High lamp lumen depreciation over the life of the lamp
- Lamp life 24,000 hours
- Design of MV luminaire results in up to 30% initial light loss due to absorption by the luminaire.

## **Public Safety Impacts**



- 100 % of light emitted is utilized to light roadway
- Better color rendering for identifying objects
- All streets satisfy ANSI/IES RP-8 National Standards for Roadway Lighting, accounting for:
  - Type of roadway
  - Area classification
  - Pavement type
  - Pedestrian conflict
  - Roadway width
  - Luminaire height



#### **Timeline**



#### **2010**

- NSTAR rebate agreement reached to convert Mercury Vapor fixtures to LED
- 2,800 fixtures converted on residential streets in Brighton, Jamaica Plain,
   East Boston and South Boston

#### **2011**

- Wide-scale installation of 12,000 additional MV fixtures throughout City
- New fixtures allowed for replacement of higher wattage units on arterial streets & areas of public safety concern

#### **2012**

- Goal is to complete remaining 8,200 cobrahead fixtures throughout the City (MV and HPS)
- Begin converting MV Acorn and MV Rectilinear (shoe box) fixtures (Fall 2012)

## Financial Impacts (Cobrahead Conversion)



## Total Project Cost:

- Materials: \$6.8 million
- Installation: \$742,000 (projected)
- Utility (NSTAR) Incentive: \$3.8 million
- City of Boston Cost: \$3.7 million
- Annual Energy Savings:
  - \$2.8 million (upon completion)
- This project paid for itself in less than 1.5 years

#### **Questions?**



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